

I Claim:

1. A motor vehicle transfer case comprising, in combination,
 - an input shaft;
 - a primary output shaft;
 - a chain drive sprocket disposed about said input shaft;
 - a secondary output having a driven chain sprocket;
 - a chain engaging said sprockets;
 - an interaxle differential having an input driven by said input shaft, a first output coupled to said primary output shaft, and a second output coupled to said chain drive sprocket;
 - an armature coupled to said chain drive sprocket;
 - a rotor disposed adjacent said armature and coupled to said input shaft; and
 - an electromagnetic coil disposed adjacent said rotor.
2. The motor vehicle transfer case of claim 1 wherein said input shaft is adapted to be driven by an output of a transmission.
3. The motor vehicle transfer case of claim 1 further including a housing adapted to rotatably receive said shafts.
4. The motor vehicle transfer case of claim 1 wherein said armature is a circular plate and said rotor is U-shaped in cross-section and partially surrounds said electromagnetic coil.

5. The motor vehicle transfer case of claim 1 wherein said electromagnetic coil is driven by an output of a microprocessor.

6. The motor vehicle transfer case of claim 1 further including a microprocessor having an output driving said electromagnetic coil and a throttle position sensor providing a signal to said microprocessor.

7. The motor vehicle transfer case of claim 1 wherein said armature and said rotor define pluralities of discontinuous arcuate slots.

8. A transfer case having an electromagnetic drag assembly, comprising, in combination:

an input shaft;

a primary output shaft;

a secondary output shaft;

an interaxle differential having an input driven by said input shaft, a first output coupled to said primary output shaft, and a second output driving said secondary output shaft;

an electromagnetic synchronizer and brake assembly having a first member coupled to said second output, a second member disposed adjacent said first member and coupled to said input shaft and a stationary electromagnetic coil disposed adjacent said second member.

9. The transfer case of claim 8 further including a housing adapted to rotatably receive said shafts.

10. The transfer case of claim 8 wherein said first member is a plate and said second member is U-shaped in cross-section and partially surrounds said electromagnetic coil.

11. The transfer case of claim 8 further including a chain drive sprocket disposed on said input shaft and coupled to said second output of said differential, a driven chain sprocket coupled to said secondary output shaft and a chain engaging said sprockets.

12. The transfer case of claim 8 wherein said first and said second members are circular and define a plurality of discontinuous arcuate slots.

13. The transfer case of claim 8 wherein said interaxle differential includes planet gears and a carrier driven by said input shaft.

14. An electromagnetic synchronizer and brake for a motor vehicle powertrain component, comprising, in combination:

an interaxle differential having an input, adapted to be driven by an output of a transmission, a first output adapted to drive a first driveline and a second output adapted to drive a second driveline; and

an electromagnetic synchronizer and brake assembly having a first member coupled to said second output for rotation therewith, a second member disposed adjacent said first member and coupled to said input for rotation therewith and a stationary electromagnetic coil;

whereby energization of said electromagnetic coil synchronizes and brakes rotation of said input and said second output.

15. The synchronizer and brake assembly of claim 14 further including an input shaft for driving said input, a primary output shaft driven by said first output and a secondary output shaft driven by said second output.

16. The synchronizer and brake assembly of claim 15 further including a first chain sprocket coupled to said first member, a second chain sprocket coupled to said secondary output shaft and a chain engaging said sprockets.

17. The synchronizer and brake assembly of claim 14 wherein said first member is a circular plate having a plurality of arcuate, spaced apart slots.

18. The synchronizer and brake assembly of claim 14 wherein said second member is U-shaped in cross-section and partially surrounds said electromagnetic coil.

19. The synchronizer and brake assembly of claim 18 wherein said second member further includes at least one circular discontinuous path of arcuate slots.

20. The synchronizer and brake assembly of claim 14 wherein said interaxle differential includes a carrier driven by said input, a first plurality of stepped planet gears and a second plurality of straight planet gears.